In the previous office action, claims 1 - 60 were rejected under 35 U.S.C. § 112, first paragraph as containing subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains. Claims 1 - 60 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Without acquiescing in these rejections, applicants have amended the claims to remove the language that caused these rejections. Accordingly, withdrawal of these rejections is respectfully requested.

Claims 1 - 9, 14 - 17, 22 - 26, 31 - 35, 40 - 50 and 55 - 60 are rejected under 35 U.S.C. § 102 (a) as being anticipated by U.S. Patent No. 5,946,113 Pritchett (hereinafter "Pritchett"). Claims 10, 18, 27, 36 and 51 - 54 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Pritchett in view of Stokes and Yoda. Claims 11 - 13, 19 - 21, 28 - 30 and 37 - 39 are rejected under 35 U.S.C. § 103 (a) as being unpatentable over Pritchett. Applicants respectfully traverse these rejections.

The present invention is directed to communication of color information between different devices. In prior art systems, different phosphor sets are used to provide the colors of "red", "green" and "blue. For example, a monitor may illustrate a particular color one way, but when the user prints out the color it may print out differently from what was displayed on the monitor. Also, viewing conditions may vary such that colors appear differently to different observers. The present invention overcomes the deficiencies of the prior art by mapping RGB color data values of a source color space representing an image in a first device into gamut expanded sRGB color values of a gamut expanded sRGB color space; and converting the gamut expanded sRGB color data

values of the gamut expanded sRGBA color space into RGB color data values of a destination color space representing an image in a second device, the RGB color data values of the first device being different from the RGB color data values of the second device and the physical appearance of the image in the first device being the same as the physical appearance of the image in the second device as recited in claim 1.

Pritchett does not address the problem identified above and solved by the present invention. At most Pritchett shows taking color data values from one color space (e.g., YCrCb) and converting them to a second color space (RGB) through the use of an extended second color space. Nowhere does Pritchett teach or suggest mapping RGB color data values representing an image in a first device into gamut expanded sRGB color values of a gamut expanded sRGB color space; and converting the gamut expanded sRGB color data values of the gamut expanded sRGB color space into RGB color data values representing an image in a second device, the RGB color data values of the first device being different from the RGB color data values of the second device and the physical appearance of the image in the first device being the same as the physical appearance of the image in the second device as recited in claim 1.

In view of the above, it is respectfully submitted that claim 1 of the present invention is not anticipated by Pritchett and is, therefore, patentable over the art of record. Independent claim 15, 57 and 60 are also patentably distinct from Pritchett for the same features as claim 1 to the extent they recite common features and further in view of the additional features recited therein.

Pending claims 4 and 6 - 14 recite additional features and depend directly or indirectly from claim 1 and claims 16 - 22 recite additional features and depend directly

or indirectly from Claim 15. Thus, claims 4, 6-14 and 16-22 are patentably distinct from Pritchett for the same reason as their ultimate base claim and further in view of the novel features recited therein. For example, contrary to the action's assertion, Pritchett fails to describe or teach that the gamut expanded sRGB color space is linear in visual intensity as recited in claim 6.

Claims 10, 18, 27, 36 and 51 - 54 have been rejected under 35 U.S.C. § 103 (a) as being unpatentable over Pritchett, as applied to Claims 1 and 15 in view of Stokes and U.S. Patent No. 5,502,580 by Yoda et al. (hereinafter "Yoda"). Applicants respectfully traverse the rejection.

Yoda discloses that the YCC color scheme can be uniquely converted to the XYZ color scheme mathematically. Stokes describes a transformation matrix for converting 1931 CIE XYZ color space data to RGB color space data where Y has been normalized to 1. Neither Yoda nor Stokes alone or in combination overcomes the deficiencies of Pritchett. For all of the above reasons, it is respectfully submitted that the pending claims are novel and non-obvious over Pritchett in combination with Yoda and/or Stokes.

In view of the foregoing and for at least the above reasons, it is submitted that the pending claims are patentable over the art of record and that the application is in condition for allowance. Applicants respectfully request reconsideration and withdrawal of the objection and the rejections.

If any fees are deemed necessary in order to keep this application in force, the Assistant Commissioner is authorized to charge these fee(s) to our Deposit Account No. 19-0733.

Should the Examiner believe an interview would advance the prosecution of the application, the Examiner is encouraged to telephone the undersigned counsel to arrange such a conference.

Respectfully submitted,

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MARKED-UP VERSION OF AMENDMENT

IN THE CLAIMS:

1. (Twice Amended) A method for providing a color space representation of color images in a color management system, comprising the steps of:

mapping ~~color to~~ RGB color data values representing an image in a first device into~~in one of a~~ gamut expanded sRGB color values of ~~space and~~ a gamut expanded sRGB~~A~~ color space~~, wherein said gamut expanded color space is a common color data interchange format~~; and

~~labeling an image determined by mapped color values as one of a~~ converting the gamut expanded sRGB color data values~~space image and a~~ of the gamut expanded sRGBA color space~~ image~~ into RGB color data values representing an image in a second device, the RGB color data values of the first device being different from the RGB color data values of the second device and the physical appearance of the image in the first device being the same as the physical appearance of the image in the second device.

4. (Twice Amended) The method of claim 1~~3~~ wherein~~, where~~ if the color data values in ~~one of~~ the gamut expanded sRGB color space ~~and the gamut expanded RGBA color space~~ lie outside a range of the RGB data values of the second device~~destination color space~~, further including~~mapping includes~~ clipping the color data values for the second device~~destination color space~~.

6. (Twice Amended) The method of claim 1 wherein ~~one of~~ the gamut expanded sRGB color space ~~and the gamut expanded RGBA color space~~ is linear in visual intensity.

7. (Twice Amended) The method of claim 1 wherein ~~one of~~ the gamut expanded sRGB color space ~~and the gamut expanded RGBA color space is~~ an XsRGB color space that includes at least the visible range of color values, and where selected, ~~wherein~~ one of the gamut expanded RGB color space and the gamut expanded RGBA color space includes an alpha channel for at least one of: transparency information and opaqueness information.

8. (Twice Amended) The method of claim 1 wherein ~~one of~~ the gamut expanded sRGB color space ~~and the gamut expanded RGBA color space~~ includes a color space defined by a gamut that extends into negative component values and beyond 1.0 when normalized to 1.0 in RGB.

9. (Twice Amended) The method of claim 1 wherein mapping the RGB color values to ~~one of~~ the gamut expanded sRGB color space ~~and the gamut expanded RGBA color space~~ includes utilizing multiplication of R_0, G_0, B_0 values by a predetermined matrix, where the R_0, G_0, and B_0 values denote normalized numerically linear red, green and blue components for a color value.

11. (Amended) The method of claim 1 ~~wherein,~~ wherein each color data value of the source color space uses a signed 16 bit integer and 13 bits are used as a decimal portion.

13. (Amended) The method of claim 4, wherein mapping includes, where color data values of the first device have been represented using signed 16 bit values and 13 bits of decimal precision, clipping the 16 bit values below 0 and above 8192 to convert the 16 bit values to 8 bit values.

14. (Amended) The method according to claim 1, wherein the color data values of the first device are one of~~:~~ non-premultiplied color data values; premultiplied color data values; and normalized numerically linear premultiplied color values.

15. (Twice Amended) In a digitized image processing system in which an image digitizer outputs digital signals representing an image, a method for providing representation of color images from measured RGB color values in a color management system, comprising the steps of:

mapping the measured RGB color values to a gamut expanded sRGB color space, wherein the sRGB expanded color space includes color values beyond a reproduction range of a specific device and includes all colors in a humanly visible gamut ~~and further wherein said gamut expanded color space is a common color data interchange format~~; and

~~labeling an image determined by the color values mapped to the gamut expanded color space as a gamut expanded color space image~~converting the gamut expanded sRGB color data values of the gamut expanded sRGB color space into RGB color data values representing an image in a destination device, the measured RGB color data values being different from the RGB color data values of the destination device and the physical appearance of the image output by the digitizer device being the same as the physical appearance of the image in the destination device.

16. (Twice Amended) The method of claim 15 wherein the gamut expanded sRGB color space includes an XsRGB color space defined by a gamut that extends into negative component values and beyond 1.0 when normalized to 1.0 in RGB, and where selected, wherein the expanded sRGB~~/RGBA~~ color space includes an alpha channel for at least one of: transparency information and opaqueness information.

17. (Amended) The method of claim 15, wherein said mapping the measured color values to an expanded sRGB color space includes utilizing multiplication of R_0, G_0, B_0 values by a predetermined matrix, where the R_0, G_0, B_0 values denote numerically linear red, green and blue components for a color value.

18. (Amended) The method of claim 17~~,5~~ wherein the R_0, G_0, B_0 values are obtained in accordance with the following:

$$\begin{bmatrix} R_0 \\ G_0 \\ B_0 \end{bmatrix} = \begin{bmatrix} 3.241 & -1.5374 & -0.4986 \\ -0.9692 & 1.8760 & 0.0416 \\ 0.0556 & -0.2040 & 1.0570 \end{bmatrix} \begin{bmatrix} X \\ Y \\ Z \end{bmatrix}$$

wherein X, Y, and Z denote 1931 Commission Internationale de l'Eclairage XYZ values wherein Y has been normalized to 1.

19. (Amended) The method of claim 15 wherein, wherein each measured color data value uses a 16 bit integer and 13 bits are used as a decimal portion.

20. (Amended) The method of claim 15, wherein 16 bit components R_{16}, G_{16}, and B_{16} of measured color data values are given by:

$$\begin{bmatrix} R_{16} \\ G_{16} \\ B_{16} \end{bmatrix} = 8192 \times \begin{bmatrix} R_0 \\ G_0 \\ B_0 \end{bmatrix}$$

where the R_0, G_0, B_0 values denote normalized numerically linear red, green and blue components for a color value.

21. (Amended) The method of claim 15, wherein ~~mapping includes, where~~if measured color data values have been represented using signed 16 bit values with 13 bits of decimal precision, further including clipping the 16 bit values below 0 and above 8192 to convert the 16 bit values to 8 bit values.

22. (Amended) The method of claim 15, wherein the measured color data values are one of~~:~~

non-premultiplied color data values;

premultiplied color data values; and

normalized numerically linear premultiplied color data values.

23. (Twice Amended) A computer-readable medium having computer-executable instructions for performing the steps of:

mapping ~~the~~ measured color values to a gamut expanded sRGB color space, wherein the~~said~~ gamut expanded sRGB color space ~~is a common color data interchange format~~ includes color values beyond a reproduction range of a specific device and includes all colors in a humanly visible gamut; and

~~labeling an image determined by the color values mapped to the gamut expanded color space as a gamut expanded color space image~~converting the gamut expanded sRGB color data values of the gamut expanded sRGB color space into RGB color data values representing an image in the destination device, the measured RGB color data values being different from the RGB color data values of the destination device and the physical appearance of the image output by the digitizer device being the same as the physical appearance of the image in the destination device.

57. (Amended) In a digitized image processing system in which an image digitizer utilizes color image information to output RGB digital color signals representing a color image to an apparatus that uses the digital color signals to provide representation of a color image in a color management system, the apparatus comprising:

an expanded sRGB color space mapper, for mapping the digital color data signals representing RGB color data values of the image digitizer~~a source peripheral device~~ to

gamut expanded sRGB color space values~~, wherein the gamut expanded color space values comprise a common color data interchange format~~; and

a processor for converting said gamut expanded sRGB color space values to RGB color space values ~~for a color space~~ representing an image in ~~of~~ a destination peripheral device, the RGB color data values of the image digitizer being different from the RGB color data values of the destination peripheral device and the physical appearance of the image in the image digitizer being the same as the physical appearance of the image in the destination peripheral device.

60. (Amended) A method for representing color images in a color management system in a gamut expanded sRGB color space and further representing at least one of super transparent and super opaque colors using an alpha channel, comprising the steps of:

representing RGB color data values of a source peripheral device as one of perceptually visible super transparent data values and perceptually visible super opaque data values in said gamut expanded sRGB color space~~, wherein the gamut expanded color space is a common color data interchange format~~; and

converting one of said perceptually visible super transparent data values and perceptually visible super opaque data values to RGB color data values of a destination peripheral device, the RGB color data values of the source peripheral device being different from the RGB color data values of the destination peripheral device and the physical appearance of an image represented by the RGB color data values in the source

peripheral device being the same as the physical appearance of an image represented by the RGB color date values in the destination peripheral device.